San Francisco Bay Conservation and Development Commission
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June 8, 2018

Application Summary
(For Commission consideration on June 21, 2018)

Number:	BCDC Consistency Determination No. C2003.010.07 (Material Amendment No. Seven)
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60th Day:	July 25, 2018
Staff Assigned:	Brenda Goeden (415/352-3623, brenda.goeden@bcdc.ca.gov)

Summary

Applicant: U.S. Fish and Wildlife Service (USFWS)

Project Partners: California State Coastal Conservancy (Conservancy)

Location: In the Commission's Bay and salt pond jurisdictions of the Coastal Zone, in a portion of the 8,000-acre Alviso Complex: at the Island Ponds A19 and A20 in the City of Fremont, Alameda County; Pond A8 and A8S in the City of San Jose, Santa Clara County; and Alviso-Mountain View Ponds A1 and A2W in the City of Mountain View, Santa Clara County. In a portion of the 1,600-acre Ravenswood Complex at Ponds R3, R4, R5, and S5, located in the City of Menlo Park, adjacent to Redwood City, in San Mateo County (see Exhibit A).

Project: The proposed project is Phase Two of the federal portion of the South Bay Salt Pond Restoration Project (SBSPR Project). Phase Two would further enhance and restore former salt ponds to a mosaic of tidal wetlands and managed ponds at the Alviso and Ravenswood salt pond complexes. The activities associated with Phase Two include enhancing and restoring tidal habitat, enhancing managed ponds, ditch blocking, levee modifications (lowering, removal, and improving), levee breaching, installing and improving trails and other recreation/public access facilities, constructing habitat islands, removing existing and installing new water control structures and bridges, and filling for transitional habitat. The tidal habitat proposed for enhancement and restoration includes salt and brackish marsh, mudflats, subtidal flats and channels, marsh transitional habitat, salt pannes and ponds, and sloughs. Enhancement of managed ponds would include habitat islands, improved water regime management to vary pond depths (to allow creation of vegetated ponds, salt flats, shallow ponded areas, and deep-water ponds) and salinities.

Phase Two would include: the Alviso-Island Ponds A19 and A20; Alviso Ponds A8 and A8S; Alviso-Mountain View Ponds A1 and A2W; and Ravenswood Ponds R3, R4, R5 and S5. In total, Phase Two includes enhancing, restoring and reconfiguring approximately 1,335 acres of tidal habitat, 600 acres of reversible muted tidal marsh, 67 acres of managed ponds, and 270 acres of seasonal ponds (See Tables 1 and 2). This consistency determination is for Phase Two only of the SBSPR Project. Restoration activities in future phases of the SBSPR Project will require additional amendments to the Commission Consistency Determination for this project.

Table 1. Acreage Proposed for Conversion and Habitat Types Planned for Phase Two (in acres)

Pond Complex	Pond	Planned Habitat Type	Acreage	Anticipated Completion Date	Total Area
Alviso	Island Ponds A19, A20	Enhance Tidal	330[E]	2020	1,640
	Ponds A8, A8S	Enhance Muted Tidal	600 [E]	2019	
	Mountain View Ponds A1, A2W	Tidal	710[N]	2021	
Ravenswood	Pond R3	Seasonal Pond	270 [E]	2021	632
	Pond R4	Tidal	295 [N]	2021	
	R5, S5	Managed Pond	67 [N]	2021	
Total Area					2,272

E = Enhanced habitat, N = New habitat

Table 2. Approximate Existing Habitat and Habitat Areas Resulting from Phase Two Conversion and Restoration and Enhancement Activities (in acres)

Habitat Type	Pond Complex	Existing Habitat	Habitat Change after Phase Two
Managed Ponds / Seasonal Ponds	Alviso	710	710
	Ravenswood	632	632
		Net Change: 0	
Tidal Marsh Habitat	Alviso	330	1,040
	Ravenswood	0	295
		Net Change: 1005	

Habitat Type	Pond Complex	Existing Habitat	Habitat after Phase Two
Reversible Muted Tidal Habitat	Alviso	600	600
		Net Change: 0	
	Ravenswood	0	337
		Net Change: 337	
Total Project Area			**3,614**

Issues Raised: The staff believes that the Consistency Determination raises six primary issues regarding the McAteer-Petris Act and the San Francisco Bay Plan (Bay Plan) policies, including: (1) if the volume of proposed fill in the Bay and Salt Ponds is consistent with the Bay Fill and Salt Pond policies; (2) whether the project is consistent with the Public Access policies; (3) whether the project is consistent with the Salt Pond policies; (4) whether the project is consistent with the natural resource policies, including Fish, Other Aquatic Organisms and Wildlife, and Tidal Marshes and Tidal Flats; (5) whether the project is consistent with the Water Quality policies, including salinity, dissolved oxygen, and mercury contamination; and (6) whether the project is consistent with the Dredging policies.

Background

Historically, the area occupied by the former salt ponds was predominantly tidal marsh and tidal flats. Small salt production operations around the Bay began as early as 1850, and by 1936, the Leslie Salt Company had consolidated ownership and management of several operations, producing over 300,000 tons of salt annually at 12,000 acres of salt ponds. Cargill Salt Company acquired Leslie Salt Co., in 1978 and continued to produce salt. In 2000, Cargill proposed to sell a portion of their ponds, retaining their Newark ponds for salt production.

In 2003, South Bay Salt Ponds were acquired from Cargill Salt by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), in partnership with the State Coastal Conservancy (SCC) with the intent to restore the 15,100 acres of salt ponds to tidal and managed wetlands. Shortly after the property was acquired, an interim management plan was developed and implemented to manage and maintain the existing ponds while restoration planning occurred.

The South Bay Salt Pond Restoration Project is composed of three former salt pond complexes located in the southern portions of San Francisco Bay (South Bay). The three pond complexes include: (1) Eden Landing Ponds, owned by CDFW, located along the eastern side of the Bay, adjacent to Union City and the San Mateo Bridge; (2) Ravenswood Ponds, owned by USFWS, located on the western side of the Bay, bordered by Redwood City and adjacent to the north side of the Dumbarton Bridge, with one pond just south of the bridge; and (3) the Alviso Ponds, owned by USFWS, which rim the southern extent of the Bay, south of Dumbarton Bridge and adjacent to the cities of Mountain View, Sunnyvale, Santa Clara, San Jose, Milpitas and the southern end of Fremont (Exhibit A).

The goals of the project are to restore and enhance a mix of habitats, provide wildlife-oriented public access and recreation, and provide flood management for the South Bay. When completed, the SBSPR Project would restore nearly of the 15,100 acres of former commercial salt ponds to a mix of tidal wetlands, managed ponds, and associated habitats. Because the SBSP Project is so large and has the potential to change Bay processes, wildlife use, and flood issues, the project is being conducted in phases over a 50-year timeframe, with applied studies and adaptive management opportunities built into each phase. To meet these goals, the project partners launched a four-year public planning process to design the restoration plan.

The planning process identified that the SBSP Project should restore between fifty to ninety percent of these ponds to tidal wetlands, while the balance would remain managed ponds. These two end-points represent the two preferred alternatives (Alternatives B and C) identified in the Programmatic Environmental Impact Statement/Report (PEIS/R) completed in 2007. It is therefore anticipated that at the conclusion of the SBSP Project, approximately 6,800 to 11,900 acres of the project area would be tidal habitat and 1,700 and 6,800 would be managed pond habitat. However, the ultimate ratio of tidal wetlands to managed ponds is uncertain and would be based on the percentage of managed ponds necessary to provide habitat for shorebirds and waterfowl, and whether managed ponds could be reconfigured to protect water quality.

In 2009, the planning process was complete and the SBSP Project partners implemented Phase One. Phase One included restoration of 1,600 acres of tidal marsh habitat; 1,440 acres of muted tidal habitat, 710 acres of reconfigured ponds incorporating nesting islands for birds and dry pannes for endangered snowy plovers these features were completed in 2010. The construction of the public access features, including 7 miles of new public trails; a kayak launch ramp; viewing platforms and interpretive displays at all three pond complexes and is now complete. These activities were designed to test restoration techniques on a small scale and, with adaptive management, design approaches that would allow for the successful restoration of the entire SBSPR Project site over time.

Phase Two of the project is the subject of this consistency determination amendment concurrence request from the USFWS, and if agreed to, will authorize implementation of restoration or enhancement of habitat at 10 ponds. Phase Two of the project includes work in portions of the Alviso Pond Complex (Island Ponds, Pond A8 and A8S, and the Alviso-Mountain View Ponds) and Ravenswood Pond Complex only. Once work is complete the USFWS will manage these additional ponds as part of the existing Don Edwards San Francisco Bay National Wildlife Refuge (Wildlife Refuge). The Eden Landing Complex's proposed Phase Two is currently in environmental review and will likely be the subject of an amendment request for the CDFW permit (BCDC Permit No. 2003.007.00) in 2019 or 2020.

Project Description

Project Details: The U.S. Fish and Wildlife Service (USFWS), describes the project as follows:

In the Bay:

1. Dredge approximately 9,610 cubic yards (cy) of sediment in an approximately 112,700-square-foot (2.59-acre) area of submerged tidal lands and fringe tidal marsh to create pilot channels to connect salt ponds to the Bay.

In the Bay and Salt Ponds:

1. **Alviso Complex Island Ponds (A19, A20 and A21) (Exhibit C)**
    a. Remove two levees between Ponds A19 and A20, including the western most levee of Pond A19 (1,240 feet) and the eastern most levee of Pond A20 (1,360 feet), through excavation of approximately 8,900 cy of soil and sediment;
    b. Lower 3,000 feet (2.5 acres) of levee on the north side of Pond A19 to 9 feet NAVD88 through excavation and dredging of approximately 9,400 cy of soil and sediment to allow occasional overtopping and flooding of the pond during spring tides;
    c. Excavate and dredge two breaches on the north side of Pond A19, one approximately 150 feet wide at the top and 50 feet wide at the bottom, and one approximately 90 feet wide at the top and 50 feet wide at the bottom, both with a 2:1 slope and an invert elevation of 3.5 NAVD88, through a total excavation of 2,400 cy of soil and sediment to provide additional tidal flow into the pond;
    d. Lower 1,350 feet (1.0 acres) of levee on the south side of Pond A19 to 9 feet NAVD88 through excavation and dredging of approximately 3,300 cy of soil and sediment to allow occasional overtopping and flooding of the pond during spring tides;
    e. Widen the existing breach on the south side of Pond A19 by removing an additional 90 feet of levee (total breach width 150 feet) through excavating approximately 1,500 cy of soils and sediment, to creating a bottom width of 150 feet, and 3.5-foot NAVD88 invert elevation; and
    f. Place the 25,500 cy of dredged and excavated materials in six ditch block locations, and the remaining material in existing historic borrow ditches in Pond A19 to an elevation of approximately 1.0 NAVD88.

2. **Alviso Complex (Ponds A8 and A8S) (Exhibit D)**

   a. Create 24.6 acres of transitional habitat in two areas, with a maximum elevation of 9 feet NAVD88 and a maximum width of 2,075 feet each (total of 4,150 linear feet) by placing approximately 179,000 soil and/or sediment adjacent to the existing southern levee and grading it to approximately 30:1 slope along 2,300 feet of the southeastern and 2,100 feet of the southwestern "corners" of Pond A8S.

3. **Mountain View-Alviso Complex (Ponds A1 and A2W) (Exhibit E)**

   a. Improve approximately 4,400 feet of the western Pond A1 levee (along Charleston Slough) by raising its elevation north of the proposed viewing platform to 11 NAVD88 and its elevation south of the platform to 14.7 feet NAVD88, widening its base by 50 to 100 feet, widening the crest to 12 feet north of the platform and 14 feet south of the platform to accommodate the new trail, grading the levee slope to 3.5:1 (v:h), and creating these dimensions by placing and grading approximately 130,000 cy of soil;

   b. Improve approximately 1,440 feet of the Coast Casey Forebay Levee, perpendicular to Pond A1 levee, by raising its elevation 14.7 feet NAVD88, widening its base by 30 to 90 feet, widening its crest to 24 feet, grading the levee slope to 3.5:1, and creating these dimensions by placing and grading approximately 39,450 cy of soil;

   c. Create 16.9 acres transitional habitat by place approximately 77,100 cy of soil and/or sediment to a maximum elevation of 9 feet NAVD88 and grading it to varying slopes, 40:1. 30:1, 20:1 and 10:1, along 3,900 feet of the southern edge of Pond A1;

   d. Create up to five habitat islands in Pond A1 by placing and grading approximately 26,800 cy of sediment/soil to a maximum elevation of 12.5 feet NAVD88, with 10,100 square feet in surface area, with 3:1 slopes;

   e. Construct a 2,350-feet-long, 3 feet-wide (0.16 acres) new Pacific Gas and Electric (PGE) pile supported composite plastic boardwalk in the tidal marsh north of and adjacent to Pond A1. The boardwalk would be supported by 470 pile footings, representing 280 cy of solid fill, covering approximately 700 square feet of existing marsh;

   f. Remove existing water control structure and excavate and dredge 1,700 cy of soils and sediment to create an approximately 110-foot wide breach to an invert elevation of 2 feet NAVD88, a bottom width of 60 feet, and a 2:1 side slope, through approximately 8,010 square feet of existing levee on the northwestern "corner" of Pond A1 to allow tidal flow into the pond from Charleston Slough;

g. Excavate and dredge 1,700 cy of soils and sediment to create an approximately 110-foot-wide breach with an invert elevation of 2 feet NAVD88, a bottom width of 60 feet, and a 2:1 side slope, through approximately 8,430 square feet of existing submerged tidal lands, tidal marsh and levee on the lower southeastern edge of Pond A1 to allow tidal flow into the pond from Permanente Creek/Mountain View Slough;

Pond A2W

h. Create 15.7 acres of transitional habitat by placing approximately 157,120 cy of soil and/or sediment to a maximum elevation of 9 feet NAVD88, and grade it to approximately 30:1 slope along 2,600 feet of the southern edge of Pond A2W;

i. Improve approximately 6,440 feet of the northern (along the Bayfront) and eastern Pond A2W levee, by grading the surface to be flat and resurfacing as needed;

j. Create up to five habitat islands in Pond A2W by placing and grading approximately 26,800 cy of sediment/soil to a maximum elevation of 12.5 feet NAVD88, approximately 10,100 square feet in surface area, with 3:1 slopes;

k. Upgrade PG&E access to infrastructure and sixteen transmission towers by raising and widening the tower pedestals using 80 cy of concrete fill, and raise the elevation of the existing wooden boardwalk, using existing pillars, by 4 feet, and increase the width throughout by 2 feet (increase in 0.31 acres) in Pond A2W;

l. Excavate and dredge 5,400 cy of soils and sediment to create two breaches, one approximately 200 feet wide and 230 feet long (2,400 cy), and the second approximately 200 feet wide and 200 feet long (3,000 cy), both with an invert elevation of 2 feet NAVD88, a bottom width of 60 feet, and 2:1 side slopes, through approximately 0.2 acres of existing tidal marsh and levee on the western side of Pond A2W to allow tidal flow into the pond from Permanente Creek/Mountain View Slough;

m. Excavate and dredge 3,300 cy of soils and sediment to create two breaches, both approximately 60 feet wide. One channel would be approximately 200 feet long, and the other would be approximately 210 feet wide, both with an invert elevation of 2 feet NAVD88, a bottom width of 60 feet, and 2:1 side slopes, through approximately 0.3 acres of existing tidal marsh and levee on the eastern side of Pond A2W to allow tidal flow into the pond from Stevens Creek/Whisman Slough;

n. Place up to 300 cy of rock protection (1,000 square feet) along both sides of the breaches on Whisman Slough to prevent additional erosion of the breaches;

o. Install two single span-precast/prestressed I-girder bridges, approximately 60 feet long, and 19 feet wide (1,131 square feet each), across the two breaches in the western levee adjacent to Whisman Slough at a deck elevation of 12.25 NAVD88 to allow infrastructure maintenance vehicle and public access along Pond A2W. Installation of the bridges would include cast in-place concrete foundations, wing walls, and concrete barriers along the sides and supported by 16, 14" diameter piles per bridge (32 total), a total of 540 cy of solid fill (0.1 acres);

Public Access (Exhibit I)

p. Construct a new, 1000-foot, ADA and ABA compliant, multi-use, 10-12 foot wide levee top spur trail, with two-foot wide shoulders, using a layer up to 12-inches thick of aggregate base and polymer stabilizer along Charleston Slough (western levee of Pond A1) which would require approximately 500 cy of aggregate base;

q. Construct a new, 1.1 mile, ADA and ABA compliant, multi-use, 10-12 foot wide levee top spur trail, with two-foot wide shoulders, using up to 2,600 cy of aggregate base and a polymers stabilizer along Stevens Creek/Whisman Slough (eastern levee of Pond A2W). When this trail crosses the two bridges, the trail widens to 19 feet then resumes the 10-12 foot wide trail;

r. In-kind reconstruction and pavement an existing portion of the Bay Trail using up to 700 cy of aggregate and asphalt atop the southern portion of the improved southern levee adjacent to Charleston Slough, and construct an ADA-compliant ramp connecting the existing viewing platform and the reconstructed Bay Trail using 200 cy of aggregate and asphalt;

s. Construct three new viewing platforms, including:

   (1) At the terminus of the spur trail adjacent to Charleston Slough, construct a 830-square-foot viewing platform with an aggregate base surface on a widened section of the levee, place two sets of benches, two interpretive panels, and a 10 feet high and 60-feet-wide, chain link fence to limit human and predator access to the restoration site;

   (2) Along the Bay Trail and the south levee of Pond A1, approximately 525 feet east of Permanente Creek/Mountain View Slough, construct a 440-square-foot viewing platform on a widened section of the levee with an aggregate base surface approximately 2 feet higher than the Bay Trail, place two sets of benches, and two interpretive panels; and

(3) At the terminus of the spur trail adjacent to Whisman Slough, construct a 1,900 square foot viewing platform with an aggregate base surface on a widened section of the levee, place two sets of benches, one interpretive panel, and a 10 feet high-60 feet-wide, chain link fence and gate to allow Refuge and PG&E access beyond the trail terminus, and to limit other human and predator access to the restoration site.

4. **Ravenswood Complex (Ponds R3, R4, R5 and S5) (Exhibit F)**

Pond R3

a. Install a two-way, gated water control structure at the invert elevation of 2 feet NAVD88 consisting of one 48" diameter-62 feet long, high density polyethylene (HDPE) pipe culvert, and associated operations and maintenance bridge consisting of a pre-cast/stress concrete voided slab and eight concrete piles, bordered by cable railing for safety, in the eastern levee of Pond R3 approximately 750 feet from the All-American Canal and at the site of a historic slough channel between Pond R3 and Ravenswood Slough;

b. Install a two-way, gated water control structure at the invert elevation of 4.5 feet NAVD88 consisting of one 48" diameter-67 feet long, HDPE pipe culvert, and associated operations and maintenance bridge consisting of a pre-cast/stress concrete voided slab and eight concrete piles, bordered by cable railing for safety, in the western levee between Ponds R3 and S5 approximately 200 feet from the junction of Ponds R3, S5 and R5;

c. Improve approximately 4,700 feet of the levee between Pond R3 and R4, by filling the American Canal, placing and grading approximately 182,400 cy of soil, raising its elevation to 11 feet NAVD88, widening its crest to 60 feet and its base to SS feet, and grading the slope to 3.5:1 on the north side and 4.5: on the south side of the levee;

Pond R4

d. Create two habitat transition zones in Pond R4 by placing 50,200 cy along 2,500 feet of the western levee connecting to the existing upland habitat at adjacent Bedwell Regional Park and by placing 76,300 cy along 5,200 feet of the southern levee to a maximum elevation of 9 feet NAVD88. Both transitions zones would be graded to approximately 30:1 slope;

e. Install a two-way, gated water control structure at the invert elevation of 3.5 feet NAVD88 consisting of two 48" diameter-78 feet long, HDPE pipe culvert, and associated bridge consisting of a pre-cast/stress concrete voided slab and eight concrete piles, bordered by cable railing for safety, in the north-south levee between Pond R4 and R5;

f. Excavate 1,600 cy of soil/sediment to a depth of 2 feet NAVD88 to create a 2,890 foot-long, two-foot wide, bifurcated pilot channel from the breach into Pond R4 along historic slough traces, and use excavated material to construct site features;

g. Excavate and dredge approximately 2,100 cy and 960 feet of the northwest levee to 8 feet NAVD88 with side slopes of 2:1, use the material in onsite features including levee improvements and transitional habitat;

h. Excavate and dredge an approximately 13,300 cy to create a 470- foot wide breach with an invert elevation of 2 feet NAVD88 through approximately 940 square feet of existing tidal marsh on the northeastern-most side of Pond R4 into Ravenswood Slough to allow tidal flow into the pond, and use the soil and sediment to build ditch blocks in the historic borrow ditches within the Pond;

Pond R5 and S5

i. Install a two-way, gated water control structure at the invert elevation of 2 feet NAVD88 consisting of two 48" diameter-183 feet long, HDPE pipe culvert, and associated bridge consisting of a pre-cast/stress concrete voided slab and eight concrete piles, bordered by cable railing for safety at the most eastern extent of Pond S5 and Flood Slough;

j. Excavate 8,200 cy of soil/sediment and 1790 feet of internal levees (north and south) between Pond R5 and S5 and between the two portions of Pond S5 to an elevation of 4.5 NAVD88 to create a contiguous managed pond habitat, and use the excavated soils for onsite habitat features, including the habitat island described below;

k. Construct a 1.77-acre habitat island from approximately 500 feet of remnant of interior levee and other excavated soils between Ponds R5 and S5 with an elevation of 9 feet NAVD88 and 2:1 sides slopes. Surface the habitat island with approximately 2,300 cy of sand, shell or other substrate to increase the habitat value of the island;

Public Access (Exhibit J)

l. Construct a new, 0.5 mile, ADA and ABA compliant, multi-use, 10 to 12 foot wide levee top connecting trail, with two-foot wide shoulders, by surfacing the raised levee to create a trail with up to 1,200 cy of aggregate base and a polymers stabilizer between Ponds R3 and S5, R4 and R5 (western side Pond R3 and eastern side of Pond R5);

m. Install a post and cable fence on both sides of the levee between Pond R3 and R5 and Pond R4 and R5 to deter human access into the ponds;

n. At the junction of Ponds R3, R4, R5 and S5, construct a 9,960 square foot viewing platform on a widened section of the levee, surfaced with an aggregate base, place three sets of benches, three interpretive panels, 3 feet wide with the bottom of the angled panel (36-inch by 24-inch) started at 32 inches above grade for ADA compliance, and immediately east of the platform, install chain link fence to limit human and predator access to the restoration site;

o. Install a 3-foot high approximately 8,000-feet-long chain link fence along the northern edge of the southern Pond R3 and Pond S5 levee to deter human and predator access to the ponds. At the western juncture of Pond S5 and R3, install a minimum of a 10-foot-wide gate to allow Refuge personnel access to the Ponds; and

p. Conduct in-kind repair and maintenance in perpetuity of the levees, water control structures, bridges, trail and public access amenities.

Fill: The proposed project would involve the placement of approximately 842,000 cy of fill over approximately 125.9 acres of the Commission's Coastal Zone throughout the project area to restore tidal marsh and managed pond habitat and construct public access improvements. The fill that would be excavated on site including the soil/sediment from breaches and levee lowering, would be used on site for habitat and infrastructure features. Approximately 404,000 cy of soil and sediment would be placed upland to improve and repair levees, install water control structures and bridges and construct public access features and approximately 438,000 cy of material would be used to fill ditch blocks, create transitional habitat and nesting islands, and berms to reconfigure salt ponds. Because the necessary volume of material to construct all the project features, an additional 607,380 cy of fill would be imported.

Public Access: Public access, ancillary amenities, and recreational opportunities are currently available at or near each of the Phase Two pond clusters. As the proposed project is within a National Wildlife Refuge, the public activities are consistent with refuge policies. The Alviso-Island Ponds are accessible only by boat, and are used for seasonal waterfowl hunting, and boating and fishing are allowed in the adjacent tidal sloughs. Similarly, at Ponds A8 and A8S there is seasonal waterfowl hunting from the levee tops and boating and fishing are allowed in the adjacent tidal sloughs and Bay. However, fishing is not allowed in Pond A8 or A8S due to high levels of mercury, a neurotoxin. The Alviso-Mountain View Ponds A1 and A2W are immediately adjacent to the City of Mountain View's Shoreline Park, with a number of trails, including segments of the Bay Trail, viewing areas, a golf course, a sailing

lake, a kite-flying hill, dog park, and other amenities. In-season waterfowl hunting is allowed in Pond A2E and AB1 to the east of these Phase Two ponds.

The Ravenswood Ponds R5, S5, and R4 are adjacent to the City of Menlo Park's Bedwell Bayfront Park, which contains a large network of trails. The Bay Trail runs along and just outside of the southern border of this pond cluster. In addition, kayaking and other boating is allowed in the sloughs around the ponds; there is no hydraulic connection to Ravenswood Ponds or to the Bay or sloughs.

Phase Two of the Restoration Project would include the following public access additions and improvements (Exhibit G). The proposed trails will be multi-use, and surfaces of the trails and viewing platforms would be hard packed aggregate surface, unless otherwise noted. In keeping with Refuge policy, dogs would not be allowed on the trails or viewing platforms (service dogs excepted).

1. **Alviso-Island Ponds and Alviso-A8 Ponds.** There are no public access features proposed at the Island Ponds or the A8 and A8S Ponds during Phase 2 of the SBSP Restoration Project. The Island Ponds are not safely accessible for the public, (except by small boats) ,and the levees around them are expected to decay over time. Pond A8 and A8S will be restored to full tidal exchange and the completion of the Bay Trail spine along or adjacent to its southern border would be constructed during a later phase of the project, potentially Phase Three.
2. **Alviso-Mountain View Ponds.** The proposed actions at the Mountain View Ponds include three new viewing platforms and two new trails along existing and improved levees, each with connections to the existing Bay Trail spine, and to the trail network inside the City of Mountain View's Shoreline Park. The proposed improvements also avoid reducing or degrading the existing recreational and public access features. Moving from west to east along the project boundaries, the following public access amenities will be provided (Exhibit I).
    a. **Existing Trail and Viewing Platform (EV)**. The USFWS proposes to raise a portion of an existing levee to maintain flood protection for the adjacent community along the southern edge Charleston Slough where the Bay Trail spine and an existing viewing platform are located. Following levee raising, the Bay Trail would be repaved and restriped compliant with the Americans with Disabilities Act (ADA) and match the current condition, but at a higher elevation. In order to reconnect the reconstructed trail to the existing wooden viewing platform, an ADA-compliant, paved ramp will be built.
    b. **New Trail and Viewing Platform (V1).** On top of an improved levee and between Charleston Slough and Pond A1, the project proposes to build a new, Architectural Barriers Act (ABA) and ADA-compliant, trail approximately 1,000 feet length, which will end in a new viewing platform. The levee-top trail would be 10 to 12 feet wide, with two-foot-wide

shoulders on either side. The trail would provide views of the planned marsh restoration action in Pond A1 and the intertidal mudflat in Charleston Slough.

The viewing platform would be approximately 830 square feet and consist of a widened and graded levee top to allow placement of two sets of benches. One set off benches would face west into Charleston Slough and the other set would face east into Pond A1. The viewing platform would include two interpretive panels. To the northeast of the viewing platform, a fence would be placed to limit human and predator access to the larger restoration site.

c. **New Viewing Platform (V2).** Currently, the Bay Trail spine runs along the southern edge of Pond A1. Approximately 525 feet to the west of Permanente Creek, a new viewing platform (V2) would be built. The platform would be approximately 440 square feet with a slight increase in elevation (~1-2 feet) from the Bay Trail. Amenities include 2 benches and two interpretive panels. The platform would provide a view of Pond A1 as it transitions to marsh.

d. **New Trail and Viewing Platform (V3).** A 1.1-mile spur trail would be built atop an improved levee on the eastern edge of Pond A2W and end at a new viewing platform (V3) adjacent to San Francisco Bay. The trail would begin at the intersection of the existing Bay Trail spine and the Stevens Creek trail. Views along the trail include Pond A2W as it transitions to tidal marsh to the west and of Stevens Creek and the existing fringing marsh to the south. The viewing platform would provide views of Bay open water habitat. The trail would be ADA- and ABA-compliant, 10 to 12 feet wide and two-foot shoulders on either side. Along the length of the trail there would be two bridges crossing levee breaches to Stevens Creek.

   The new viewing Platform (V3) at the terminus of the Pond A2W trail, would consist of a widened and graded levee top to allow placement of two benches, large woody debris that could be used as seating, and an interpretive panel. At this viewing platform there would be 360-degree views of a range of habitats, including the Bay, Pond A2W, to Stevens Creek, and to existing marsh and pond habitat in Pond A2E.

3. **Ravenswood Ponds.** The proposed actions at the Ravenswood Ponds would provide half of mile of new public trails adding connections to the Bay Trail and an existing trail network inside the City of Menlo Park's Bedwell Bayfront Park. A new viewing platform would provide a unique opportunity for viewing three different types of ongoing habitat restoration activities (Exhibit J).

a. **New Trail.** The existing levee that runs north to south and extends between the southeastern corner of Bedwell Bayfront Park and the existing Bay Trail adjacent to Pond R3 and along the managed wetlands R5 and S5 will be raised and a new one-half mile long, ADA and ABA compliant trail would be constructed. The newly constructed trail will be 10 to 12 feet wide, with two-foot shoulders on either side. This portion of the trail will have post and cable fencing along either side to deter human intrusion into the habitat. This trail will connect a number of existing trails and complete a loop trail around Ponds R5 and S5. The Bay Trail connection would lead directly into the Refuge and would be gated and signed appropriately to control entry into the Refuge.

b. **New Viewing Platform (V4).** Near the mid-point of the new trail, an at-grade 9,960 square foot viewing platform would be built. Similar to the other viewing platforms, it would consist of a widened area of the levee. The location of the platform is at the intersection of four ponds targeted for different habitats and would provide views of restoring tidal marsh in Pond R4, enhanced seasonally dry salt panne habitat for western snowy plover habitat in Pond R3, and shallow water managed ponds for small shorebirds and waterfowl in Ponds R5 and S5, providing a unique perspective due to elevation and habitat diversity. Three sets of benches (two benches each) would face each habitat type, and signage and interpretive panels would provide information on the habitats, wildlife, and the restoration processes. Immediately to the east of this viewing platform a human and predator deterrent fence would be constructed.

Priority Use: The proposed project is located in a Wildlife Refuge priority use areas on *San Francisco Bay Plan* Map No. Seven.

Schedule and Cost: The USFWS proposes to begin Phase Two in Summer 2018 and complete work for this phase at the end of 2023. Following the completion of Phase Two, the project would continue over its 50-year period and would involve adaptive management measures to assess the project success and to refine habitat restoration and management strategies. Future phases would include monitoring, levee rehabilitation and construction, additional public access trails and facilities, addition restoration of ponds to marsh and managed ponds, and maintenance activities. The USFWS estimates that the total project cost for Phase Two would be approximately $31,916,000.

Staff Analysis

A. **Issues Raised:** The staff believes that the Consistency Determination raises six primary issues regarding the Commission's San Francisco Bay Plan (Bay Plan) policies including: (1) if the volume of proposed fill in the Bay and Salt Ponds is consistent with the McAteer- Bay Fill and Salt Pond policies; (2) whether the project is consistent with the Public Access policies; (3) whether the project is consistent with the Salt Pond policies; (4) whether the project is consistent with the natural resource policies, including Fish, Other Aquatic Organisms and Wildlife and Tidal Marshes and Tidal Flats; (5) whether the project is consistent with the Water Quality policies, including salinity, dissolved oxygen, and mercury contamination; and (6) whether the project is consistent with the Dredging policies.

1. **Fill.** Most of the fill proposed in Phase Two would involve fill in former salt ponds, with a more limited fill volume occurring in the Commission's Coastal Zone Management area and the salt pond and shoreline band jurisdictions.

   According to Section 66605 of the McAteer-Petris Act, the Commission may allow fill in the Bay and certain waterways only when the fill meets specific requirements: (a) the public benefits from fill must clearly exceed the public detriment from the loss of water areas, and fill should be limited to water-oriented uses or minor fill for improving shoreline appearance and public access; and (b) no alternative upland location is available. The Commission may allow fill in the Bay, certain waterway, *and salt ponds* (emphasis added) when: (a) the water area authorized to be filled should be the minimum necessary to achieve the purpose of the fill; (b) the fill should minimize harmful effects to the Bay including the water volume, circulation, fish and wildlife resources, and marsh fertility; and (c) the fill should be authorized when the applicant has valid title to the properties in question.

   The Bay Plan's policies for salt ponds state that, "if the owner of any salt ponds withdraws any of the ponds from their present uses, the public should make every effort to buy these lands and restore, enhance or convert these areas to subtidal or wetland habitat." It further states that "…opening ponds to the Bay represents a substantial opportunity to enlarge the Bay and restoring, enhancing or converting ponds can benefit fish, other aquatic organisms and wildlife, and can increase public access to the Bay…." The Salt Pond policies further state that, "[d]esign and evaluation of the project should include an analysis of: (a) the anticipated habitat type that would result from pond conversion or restoration, and the predicted effects on the diversity, abundance and distribution of fish, other aquatic organisms and wildlife; [and] (b) potential fill activities, including the use of fill material such as sediments dredged from the Bay and rock, to assist restoration objectives…."

In March 2003, the State of California and the United States of America acquired 16,500 acres of commercial salt ponds in San Francisco Bay from Cargill, Inc. The purpose of the acquisition was to protect, restore and enhance the property for fish and wildlife, and to provide opportunities for wildlife-oriented recreation and education. According to the Consistency Determination, "[t]he project proposes to use fill to directly create and allow for the natural creation of habitat for special-status species, to enhance habitat by restoring tidal action to former salt ponds and provides for adaptive management to minimize any harmful effects from this fill in future phases of the project. In so doing, tidal marshes and tidal flats would be restored, increasing habitat, water quality, the surface area and volume of the Bay, would manage flood risk, and would conserve these areas to the fullest extent possible."

Enhancing the restored habitat at the Alviso Island Ponds involves removing levees between Pond A19 and A20, lowering levees on the north and south side of Pond A19, and creating two new breaches and widening an existing breach, also in Pond A19. These activities will generate 24,500 cy of excess soil and sediment that will be used to fill existing historic borrow ditches within the Island Ponds. Filling these low areas will facilitate better water quality and more rapidly restoring habitat in low lying areas.

The activity proposed in Alviso Ponds A8 and A8S, a muted tidal pond system, is constructing two areas of transition habitat that will connect the existing intertidal area to the adjacent upland, providing additional high marsh habitat and high tide refugia for species using these ponds. The creation of the transitional habitat in these locations provides added protection for the adjacent closed and capped landfill from tidal energy and wind/wave energy, and some ability of the future marsh to adapt to rising seas overtime. To build these two areas of transitional habitat, approximately 179,00 cy of fill from offsite is required.

Restoring the Alviso-Mountain View Ponds A1 and A2W to tidal wetlands would require fill, some of which would be provided by onsite levee removal, lowering and breaching, but will also require 327,640 cy of fill brought from offsite sources. The improvement of two existing levees would require 170,000 cy of fill and the creation of the 32.6 acres of transitional habitat in each pond would require 235,000 cy. The improved levees will provide flood protection to the adjacent communities and the transitional habitat will provide high tide refugia and some additional wave energy reduction at the existing southern levee. Without these two features, the restoration of these ponds would likely increase flooding in the vicinity, including local roadways, parks and a light industrial area. The high tide refugia is important to the native and listed species anticipated to use the restored wetlands and will provide some ability of the project to adapt to rising sea level. In addition, the project proposes to construct up to five habitat islands in each pond, providing additional roosting, loafing and nesting habitat for certain species of birds. The construction would include importing sand or shell to provide and attractive surface for the desired birds. The remaining fill proposed includes infrastructure to provide public viewing platforms, aggregate for trail and road surfacing, access bridges, water control structures and PG&E tower access and upgrades.

The Ravenswood Pond enhancement and restoration includes restoring Pond R4 to tidal marsh and includes 50,200 cy of fill to create an area of transition habitat (intertidal to high marsh) that will connect to the adjacent upland habitat at Bedwell Park. A second transitional habitat area that would include intertidal and high marsh along an improved levee (between Ponds R3 and R4), requiring 81,00 cy of fill (4,700 cy for the levee, 76,300 cy for the transitional habitat). In addition, the levee between Ponds R3 and R5 and S5 would be improved. As in the Mountain View Ponds, a habitat island will be created with material from the levee removal between Ponds R5 and S5. A portion of the outer levee of Pond R4 will be lowered as will the levees in Pond R5 and S5 to improve these managed ponds, providing some material for construction of the levee and habitat features. Pond R3 is to remain a dry pond with no direct tidal connection but with added gated connections to improve water management to support the endangered western snowy plover and requires no fill. Similar to the Mountain View Ponds, the remaining fill proposed includes infrastructure to provide public viewing platforms, aggregate for trail and road surfacing, and water control structures.

As required by Section 66605 of the McAteer-Petris Act, Commission may allow fill only when it meets certain fill requirements including: (1) “the water area authorized to be filled should be the minimum necessary to achieve the purpose of the fill”; (2) “the nature, location, and extent of any fill should be such that it will minimize harmful effects to the Bay area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment…”; (3) “public health, safety, and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters”; and (4) “fill should be authorized when the applicant has such valid title to the properties in question that he or she may fill them in the manner and for the uses to be approved.” Further, the Bay Plan Tidal Marshes and Tidal Flats policies state in part that “a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms or wildlife habitat if the Commission finds that no other method of enhancement or restoration except filling is feasible.”

a. **Priority Use Designation.** The proposed project would be located in areas that are designated as Wildlife Refuge priority use areas on *San Francisco Bay Plan* (Bay Plan) Map No. Seven. The project is designed to convert salt ponds and managed ponds to approximately 330 acres of tidal habitat, 1,400 acres of reversible muted tidal marsh, and 479 acres of reconfigured managed ponds. Upon completion, the project area would be included within the Don Edwards San Francisco Bay National Wildlife Refuge and actively managed by the U.S. Fish and Wildlife Service.

   The Commission should determine whether the project would be consistent with the priority use designation for the site.

b. **Minimum Amount Necessary.** The project proposes to use on site soils and sediment whenever it is available and appropriate for a specific use, however, there is not sufficient material available on site for all of the proposed project features. The proposal as described requires the import and placement of approximately 179,000 cy of material at the Alviso Pond 8A and 8AS, 327,640 cy at the Alviso Mountain View Ponds and 310,300 cy at the Ravenswood ponds. The total fill is expected to be approximately 842,000 cy, with some of the fill being generated onsite, reducing the total volume of imported fill. The flood protection levees are being improved to meet current standards necessary to protect adjacent communities, parks and infrastructure and to accommodate sea level rise to mid-century, are wide enough to support future raising, and thus require the proposed volume to construct them to the appropriate dimensions.

   Habitat transition zones between marshes and uplands are locally scarce and provide habitat that is essential to sustaining five endangered species: two endangered animals, Ridgway's rail (*Rallus longirostris obsoletus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*), and three endangered plants, *Cirsium hydrophilum* var. *hydrophilum* (Suisun thistle), *Chloropyron molle* ssp. *molle* (soft bird's-beak), and *Suaeda californica* (California sea-blite). The amount and locations of transition habitat were examined in the California Environmental Quality Act (CEQA) review process by proposing different alternatives with different transitional habitat features of varying slope. In addition, the project partners held a design charrette to gain further insight into the benefits and best design for the transitional habitats. The maximum fill design included a lower slope (100:1), which would have filled a greater portion of the salt ponds and required more fill. To be responsive to the concern over larger amounts of fill, the cost of construction, and the potential for limited availability of fill, the USFWS decided that the 30:1 slope in the areas proposed, coupled with the habitat levees provided the most habitat benefits balanced with a smaller amount of fill. Thus, the USFWS believes that the project's transition habitat, habitat islands and flood levee improvement represent the minimum amount necessary to meet the goals of enhancing and restoring the habitat at each site while providing appropriate levels of flood protection to the adjacent communities.

c. **Effects on Bay Resources.** The habitat islands and transitional habitat proposed are necessary component of the marshes to provide high tide refuge for loafing, roosting and nesting, and habitat diversity within the marsh to support the goals of the project and native and migratory species. Providing these habitat features is consistent with the Baylands Ecological Habitat Goals Upland, which describes higher elevation habitat within the marsh and transitional habitat to uplands as a critical component of adapting to rising seas and would likely provide a net benefit to Bay and migratory species.

Providing transitional habitat in the intertidal zone provides shallow water habitat for shorebird foraging. The experiment conducted as part of Phase One, found that pond design with nesting islands interspersed with shallow water foraging habitat is a benefit to shorebirds and piscivorous birds, such as terns. This information has been incorporated into the project design informing the location and size of the proposed habitat islands.

In addition to Section 66605 of the McAteer-Petris Act regarding effects of fill on water volume and circulation, the Bay Plan policies on water surface area and volume state that, "[w]ater circulation in the Bay should be maintained, and improved as much as possible. Any proposed fills, dikes or piers should be thoroughly evaluated to determine their effects on water circulation and then modified as necessary to improve circulation or at least to minimize any harmful effects." Each of the proposed pond actions relate to water circulation and improved water quality. The placement of breaches and water control structures were carefully chosen to improve water circulation, providing the necessary tidal prism for marsh habitat development as in Ponds A19, A1, A2W and R4, and the ability to properly manage the water in Ponds R3, R5 and S5, for good water quality.

In areas of tidal breaches, the reestablishment tidal connectivity has the potential to scour the tidal sloughs and decrease the stability of adjacent un-engineered levees. As part of the project's monitoring and adaptive management plan, monitoring will continue and includes observing the slough channels for excess erosion or impacts to adjacent levees and marsh. The adaptive management plan sets forth a process to address unforeseen issues and allows for actions to reduce further impacts.

d. **Public Health/Benefit**. The consistency determination states that "[t]he majority of the fill will be used to improve flood protection levees and to create wildlife habitat, including that for special-status species (i.e., nesting islands). Secondarily, fill will also be used to create hydrologic conditions conducive to tidal marsh restoration, including ditch blocks, levee breaches, pilot channels, and levee lowering associated with restored ponds."

   Phase Two actions have been carefully planned to reduce the potential for coastal flooding associated with the increase in tidal marsh by improving levees and incorporating transitional habitat that would further reduce erosive potential of tidal action and waves during storms. Repairs and upgrades to existing levees prior to breaching the ponds and the installation of water structures associated with the ponds, as well as regular maintenance, improve the site conditions regarding potential flooding. Further, the USFWS would continue to maintain these ponds as part of the Refuge.

e. **Valid Title.** The USFWS acquired the approximately 10,000 acres of former salt ponds in the Ravenswood and Alviso complexes in March 2003 from Cargill Salt Company using state, federal, and private foundation funds. The former salt ponds proposed for restoration or enhancement herein were included in that purchase, and the USFWS has provided documentation of its ownership to the Commission.

The Commission should determine whether the proposed project is includes the minimum amount of fill necessary for the project, minimized effects on Bay resources, and would provide substantial public benefits, consistent with its law and policies regarding fill in the Bay/salt ponds.

2. **Public Access**

a. **Maximum Feasible Public Access.** Section 66602 of the McAteer-Petris Act states that "…existing public access to the shoreline and waters of the…[Bay] is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided." The Bay Plan Public Access policies state that "a proposed fill project should increase public access to the Bay to the maximum extent feasible…", and that "access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available.

Public access to the shoreline and views to the Bay currently exist at some portions of the SBSPR Project area as the Bay Trail spine passes immediately adjacent to the Alviso-Mountain View Pond and the Ravenswood Ponds. Both of these areas are bordered by large, regional parks that provide additional trails and viewpoints out to the Bay and across the restoration project. Public access is also available to other Alviso Complex Ponds through the Don Edwards National Wildlife Refuge with parking at its Environmental Education Center, the Alviso Marina County Park (immediately adjacent to the complex), Crittenden Lane, and Carl Lane (Sunnyvale Treatment Plant). Multiple users, including bicyclists, hikers on the Bay Trail, fishermen and duck hunters, access the region network of trails and recreational area surrounding the Phase Two project area.

Phase One of the SBSPR Project increased public access by providing approximately four miles of new trails throughout the Alviso and Ravenswood complexes, including a 2.5-mile year-round Bay Trail connection from Sunnyvale to Stevens Creek, a trailhead platform and restroom facilities at Ravenswood Pond SF2, and two raised viewing platforms, interpretive stations, and other amenities. Existing trails at Alviso Pond A16 and Ravenswood Pond SF2 were upgraded and provide ADA-accessible access. The SBSPR project sponsors and the City of Menlo Park together constructed a viewing area in Bedwell Park overlooking Pond R4 and Greco Island.

Phase Two of the SBSPR Project will provide additional public access at the Alviso Mountain View and Ravenswood ponds and improve some of the existing public access features. Alviso Pond 8A has nearby regional trails, but no public access is proposed at this pond during Phase Two. A later phase will include linking an existing nearby trail to a spur trail to Pond 8A. No public access is proposed at the Alviso Island Ponds.

In the EIS/EIR, alternative public access was proposed including both longer and shorter trails and trails in other locations. The preferred alternative identified the proposed trails because this combination increased the length and number of available trails and included both a longer and shorter trail, increased the viewing points by adding four viewing platforms, and balanced the needs of wildlife in the nearby ponds. In additional the trails connected with the Bay Trail and provided ADA access accessibility. The proposal includes approximately 2 miles of new trail and raises portions of the existing Bay trail where the levee improvements require it.

The proposed actions at the Mountain View Ponds include three new viewing platforms and two new trails, a 1,000 foot long and 1.1 mile long, along existing and improved levees, each with connections to the existing Bay Trail spine, and the trail network inside Shoreline Park.) The proposed actions at the Ravenswood Ponds would provide a new half - mile trail adding connections to the Bay Trail and an existing trail network inside the City of Menlo Park's Bedwell Bayfront Park and a new viewing platform. The trails would be ADA accessible, and a minimum of 10 feet wide with a two-foot shoulder on each, allowing for multiple uses.

The proposed viewing platform locations were carefully considered and take advantage of different settings. The Ravenswood viewing platform is particularly interesting because it would provide the opportunity to view three different habitat types while restoration is underway. The Mountain View spur trail takes advantage of Charleston Slough as a popular birding destination and provides a new overlook. The new trail proposed along Whisman Slough is unique in that it is a fairly lengthy trail and takes the visitor out to Bay edge, with views of open Bay in 180 degrees.

The USFWS notes that overall, the Phase Two habitat enhancement and restoration will increase habitat quality that would in turn result in increases in recreational potential of Refuge. The public is expected to be attracted to the site as species populations and composition increase. Specifically, recreational use of the site for bird watching, hunting and fishing is expected to increase. Thus, the restoration activities can be expected to enhance access and recreation at the site and make it a more desirable destination for hikers, boaters, bird watchers, anglers and possibly hunters.

b. **Wildlife and Human Interactions.** The Bay Plan policies on public access state in part, "[p]ublic access to some natural areas should be provided to permit study and enjoyment of these areas. However, some wildlife is sensitive to human intrusion. For this reason, projects in such areas should be carefully evaluated in consultation with

appropriate agencies to determine the appropriate location and type of access to be provided." The policies further state, "[p]ublic access should be sited, designed and managed to prevent significant adverse effects on wildlife…Siting, design and management strategies should be employed to avoid or minimize adverse effects on wildlife, informed by the advisory principles in the Public Access Design Guidelines…." The policies further state, "[p]ublic access should be integrated early in the planning and design of Bay habitat restoration projects to maximize public access opportunities and to avoid significant adverse effects on wildlife." Finally, the policies state, "[t]he Commission should continue to support and encourage expansion of scientific information on the effects of public access on wildlife and the potential of siting, design and management to avoid or minimize impacts."

In addition, the Bay Plan policies on Salt Ponds state, in part, that in the restoration, enhancement or conversion of salt ponds to subtidal or wetland habitat, "[d]esign and evaluation of the project should include an analysis of…(g) siting, design and management of public access to maximize public access and recreational opportunities while avoiding significant adverse effects on wildlife."

The Bay shoreline edge is a critical area for wildlife. Access to some wildlife areas allows visitors to discover, experience and appreciate the Bay's natural resources and can foster public support for Bay resource protection. However, in some cases, public access may have adverse effects on wildlife (including flushing, increased stress, interrupted foraging, and/or nest abandonment), and may result in adverse long-term population and species effects. The type and severity of effects on wildlife depend on many factors, including but not limited to site planning, buffers between wildlife and access, the type and number of species present, the intensity and nature of the human activity, and the inclusion of domestic animals. Potential adverse effects on wildlife may be avoided or minimized by siting, designing and managing public access. Several strategies exist to reduce or prevent adverse human and wildlife interactions including: using design elements such as paving materials and site amenities to encourage or discourage specific types of human activities; fencing to limit access or to discourage people from creating alternate access routes, using physical design features to buffer wildlife from human use such as bridges, boardwalks, moats, viewing platform and overlooks, and vegetation; managing the type, timing, and location of public use such as restricting specific activities or implementing periodic closures during sensitive periods such as breeding seasons; and incorporating education and interpretive elements.

The siting of public access in Phase Two of the SBSPR project is primarily on top of existing or improved levees and is limited so that much of the site is reserved for undisturbed habitat for sensitive and endangered species, such as the Ridgeway's rail or the western snowy plover. The trails end in viewing platforms signaling a destination and include interpretive signage which will provide information about the sensitive nature of the surrounding habitat. Viewing platforms that provide easy access for people to continue down levees after the trail has ended would be bordered by fences.

The Ravenswood Ponds have three types of proposed habitat, including tidal marsh, managed ponds and enhanced dry salt pannes. While the proposed trail and viewing platform will provide the opportunity to experience all three habitats, various features in this area would assist in managing access in sensitive areas. For example, both sides of the spur trail between the three habitats would have a post and cable fence to minimize potential intrusion from the trail into the managed pond area. Pond R3, designated endangered snowy plover nesting habitat will have chain linked fencing along the Bay Trail to keep people, pets, and trash out of it, while keeping plover chicks in. The habitat islands in all ponds are located with a significant buffer between trails and the islands to prevent flushing of roosting or nesting birds. In addition to these tools, the USFWS may, on an as needed basis implement seasonal trail closures during nesting season. Studies regarding impacts of public access on wildlife conducted during Phase One of the SBSPR project has informed the proposed design and management of the public access features such that impacts to wildlife are minimized in Phase Two.

c. **Parking.** Phase Two of the SBSPR Project proposes new and improved trails and public access amenities but no new parking facilities. The majority of the new trails are adjacent to or nearby large regional parks, Bedwell Park at the Ravenswood Ponds, and Mountain View Shoreline Park at the Alviso Mountain View Ponds where there is ample existing parking in large lots. There is additional street parking available just outside of Shoreline Park and the Mountain View Ponds. The Phase 2 access features connect to and are reached from these city park facilities. Further, the Refuge does not own lands on which added parking could be provided. The Design Review Board did not comment on whether the project should provide additional parking opportunities. The Commission should determine whether the proposed project is consistent with the Bay Plan policies regarding public access.

3. **Natural Resources Policies**

a. **Salt Pond, Tidal Marsh and Tidal Flats**. The Bay Plan Salt Pond policies state that "If the owner of any salt ponds withdraws any of the ponds from their present uses, the public should… buy these lands and restore, enhance or convert these areas to subtidal or wetland habitat. This purchase should be high priority, "because opening ponds to the Bay represents a substantial opportunity to enlarge the Bay and restoring, enhancing or converting ponds can benefit fish, other aquatic organisms and wildlife, and can increase public access to the Bay."

The Bay Plan Salt Pond and Tidal Marsh and Tidal Flats policies cumulatively state, "[a]ny project for the restoration, enhancement or conversion of salt ponds to subtidal or wetland habitat should include clear and specific long-term and short-term biological and physical goals, success criteria, a monitoring program, and provisions for long-term maintenance and management needs. Design and evaluation of projects in former salt ponds should include an analysis of: (a) the anticipated habitat that would result from pond conversion or restoration, and the predicted effects on the diversity, abundance and distribution of fish, other aquatic organisms and wildlife; (b) potential

fill activities, including the use of fill material to assist restoration objectives; (c) flood management, mosquito abatement and non-native species control measures; (d) the protection of public utilities facilities; (e) the siting, design and management of public access while avoiding significant effects on wildlife; and (f) protection of water quality from high salinity discharges, methyl mercury, low dissolved oxygen and contaminated sediments."

In addition, "tidal marsh restoration projects anywhere Commission's jurisdiction should include in design and evaluation an analysis of: (a) how the system's adaptive capacity can be enhanced so that it is resilient to sea level rise and climate change; (b) the impact of the project on the Bay's sediment budget; (c) localized sediment erosion and accretion; (d) the role of tidal flows; (e) potential invasive species introduction, spread, and their control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; (h) an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises; and (i) site characterization. If success criteria are not met, appropriate adaptive measures should be taken."

The policies further state that, "[b]ased on scientific ecological analysis and consultation with the relevant federal and state resource agencies, a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms or wildlife habitat…."

The goal of the 50-year SBSPR Project is to restore and enhance a mix of wetland habitats, provide wildlife-oriented public access and recreation, and provide for flood management. It is the largest restoration project in the region and proposes to restore vast areas of the Bay to habitat for native, threatened and endangered species. As discussed, the project is carefully planned and is being conducted in stages in order to manage the existing habitat for species accustomed to the saline habitats that have dominated the South Bay for decades while they adapt to changes in habitat structure and to reduce the impacts to water quality, sedimentation and low lying areas that would occur if all the purchased ponds were breached simultaneously. The project partners have also engaged the largest stakeholder group in the region, including the public, local government, water and flood districts, the environmental community, the business community and the regulatory and resource agencies to plan the restoration in such a way that issues are addressed and support is provided for this large scale restoration project. In addition, and significantly, the project partners have incorporated the region's vast scientific expertise, including the US Geological Survey, academia, and the resource agencies. The science program includes a lead scientist for the project, conducts studies to address areas of uncertainty, monitors changes in habitat, water quality, sedimentation, and uses an adaptive management approach that allows for a well-founded and stepwise approach to each restoration and enhancement activity. In addition, the scientific findings and outcomes is broadly shared with the restoration and stakeholder community, deepening the region's knowledge of restoration science and practice.

Phase Two actions, as previously described, include enhancing habitat at the Alviso Island Ponds and Alviso 8A Ponds, and restoring full tidal action to the Alviso-Mountain View Ponds and Ravenswood Pond R4, and enhancing habitat at the remaining Ravenswood Ponds, including a seasonally dry pond and managed ponds to support populations of fish and wildlife, special status species, migratory waterfowl, shorebirds, and anadromous and resident fishes.

During Phase One activities restoration and enhancement actions, monitoring and studies were conducted test restoration techniques on a small scale, allowing the project team to observe how habitat developed, how wildlife and the tidal and sediment transport system responded. The lessons learned from Phase One have been incorporated into the Phase Two project, including addressing additional habitat needs from Phase One actions. This approach has proven successful with habitat developing and species adjusting to the changes in habitat.

Actions at the Alviso Island ponds are designed to address the slower development of habitat in Pond A19. Removing and lowering levees, filling in historic borrow areas and increasing the number of breaches and size of one existing breach will increase tidal connectively on this site, allowing more sediment to accrete and habitat to develop.

Enhancement of the Alviso A8 ponds includes creating transitional habitat between the pond bottom, intertidal, and high marsh, as well as connecting the high marsh to adjacent uplands. Scientific experts have concluded that transitional habitat in marshes is a limiting factor for endangered species, particularly the Ridgway's rail, black rail and salt marsh harvest mouse who need high tide refugia to survive. The proposed transitional habitat provide significant acreage to support these and other species. In addition, during the Phase One monitoring period, more wave energy and erosion than expected was observed in front of the closed landfill. The transitional habitat will also provide a protective buffer and would reduce erosion of the shoreline here.

Enhancement activities at three of the four Phase Two Ravenswood Ponds are primarily focused on improving water quality and foraging opportunities for species. The endangered snowy plover uses Pond R3 for breeding and nesting, but has limited immediate access to foraging habitat. The installation of a water control structure will allow refuge managers to control the amount and quality of water on site, and creates a small, controlled "tidal slough" within this pond where small shorebirds, including snowy plover can forage. Installing water control structures and removing and lowering levees within Pond R5 and S5 provides greater connectivity between these two ponds and creates larger habitat for waterfowl and other birds. The habitat island size and slope were designed in accord with the findings from the habitat island studies in Phase One and will provide roosting and loafing habitat, with some potential for breeding habitat for terns.

The restoration to tidal marsh at the Alviso-Mountain View Ponds and Ravenswood R4 Pond was chosen because of the high likelihood of successful passive sedimentation and vegetation due to the limited subsidence at these sites and their location within multiple sloughs and areas of existing tidal marsh. Like at Alviso A8 Ponds, the importance of transitional habitat and habitat island to provide topographic diversity and high tide refuge was recognized and built into the restoration here. The locations of these features are in areas where physical access is available during construction yet would be buffered from human activity. These features also provide reduced wave energy and will assist in limiting erosion across the site in areas of long wind fetch.

Monitoring of these areas remains and important part of the restoration and informs the adaptive management of the site. If monitoring identifies impacts that require action, the Monitoring and Adaptive Management provides a decision-making structure and potential actions that can be taken. If the evaluation determines a significant impact would result, adaptive management action to avoid the impact would be implemented, and ongoing monitoring would determine the effectiveness of that action. The Adaptive Management Summary Table provided by the project sponsors includes, for each monitoring activity, restoration targets, expected time frames for decision-making, management triggers, and resulting potential management actions.

The project partners have incorporated flood risk management into the project. In carefully selecting the ponds for restoration and enhancement, the flood risk is reduced. Keeping some ponds as managed and seasonal wetlands provide flood risk reduction as they in themselves are barriers to tidal flooding. In areas where full tidal action is being restored, flood protection levees will be improved and raised to include sea level rise. The flood protection aspects of this project are discussed later in this document. PG&E infrastructure within and adjacent to the restoration will be raised and extended to accommodate the increased tidal activity while remaining accessible for maintenance.

An increase in vegetated wetlands would potentially increase mosquito populations if the areas do not drain properly. The EIS/R states that the potential increase in mosquito populations as a result of the proposed project would be less than significant, as well-drained tidal marshes typically do not provide high-quality habitat for mosquitoes. In addition, the project sponsors worked closely with the local Mosquito Abatement Districts in preparing the restoration plan to retain the Districts' ability to access the project areas for mosquito abatement actions.

A description of the public access proposed as part of the project and potential effects on wildlife is discussed under the public access section. Potential fill activities proposed as part of the project are discussed under the fill section.

In the process of restoring tidal action and hydraulic connectivity to the ponds in Phase Two, approximately 9,610 cy of sediment (2.59 acres) of levee material and fringe tidal marsh would be impacted by dredging and excavation to construct pilot channels and levee breaches. There is the potential for the scouring of adjacent tidal marshes, sloughs and channels and the erosion of nearby tidal flats as tidal action is restored to the ponds in the Phase Two project area. These impacts would potentially occur when levees are breached, however over time these sloughs would reach a new equilibrium and scour would cease. Regarding sediment supply, the project partners have engaged the US Geological Survey in studying this issue. The studies have found that at current suspended sediment levels, there is sufficient sediment in the South Bay system to support sedimentation at these sites such that the marshes should accrete rapidly. Over time, as sea level rises, this may shift, but the far south bay has the highest sedimentation in the Bay, and therefore represents best opportunity for restoring tidal marsh habitat.

b. **Fish, Other Aquatic Organisms and Wildlife.** The Bay Plan policies on Fish, Other Aquatic Organisms and Wildlife state: "[T]o assure the benefits of fish, other aquatic organisms and wildlife for future generations…the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored, and increased." These policies also state that "[t]he Commission should consult with the California Department of Fish and Game and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species…[and] give appropriate consideration of [their] recommendations in order to avoid possible adverse impacts of a proposed project on fish, other aquatic organisms and wildlife habitat." The policies further state that "[t]he Commission may permit a minor amount of fill or dredging in wildlife refuges, shown on the Plan Maps, necessary to enhance fish, other aquatic organisms and wildlife habitat or to provide public facilities for wildlife observation, interpretation, and education."

   As discussed, Phase Two of the SBSPR Project involves the enhancement and restoration of approximately 2,272 acres of former salt ponds to tidal marsh, seasonal and managed ponds providing habitat for a broad range of migratory shorebirds and waterfowl, marsh-dependent birds, mammals, fish and other aquatic organisms, with a special focus special-status species such as the western snowy plover, Ridgway's rail and the salt marsh harvest mouse. This phase would also increase connectivity for wildlife and plants among habitats within and adjacent to the project site.

   In the Phase Two EIS/R evaluation, potential impacts to species were identified and analyzed for each alternative proposed. For the preferred alternative, all potential impacts to biological resources and species were determined to be less than significant and, in some cases, beneficial. Three areas of identified controversy were identified, including: (1) the potential of the project to increase bioaccumulation of mercury; (2) tradeoff between species that use managed ponds versus marsh-dependent species; (3) that Phase Two might provide less than the maximum feasible public access; and (4) that salmonids or other native fish may become entrained in the managed ponds.

The bioaccumulation potential will continue to be an issue for wildlife throughout the South Bay due to the high mercury loads in this region (further discussed in the water quality section of this report). The opening of Pond 8A and 8AS increase areas of mercury exposure, but this was an action that occurred as part of Phase One, and the action in Phase Two would likely sequester some of the mercury under the proposed transitional habitat. The Monitoring and Adaptive Management Plan as well as the South Bay Mercury Study continue to address this issue, and there is a growing expert opinion that restoration could and should proceed with caution and monitoring without detrimental effects to water quality.

At the outset of the restoration planning, the project team identified that habitat conversion and adverse impacts to some species would be an issue that needed to be addressed. The adaptive nature of this project considers restoring half of the ponds to tidal marsh and half to managed ponds in a continuum to up to ninety percent tidal marsh and ten percent managed ponds. The project partners carefully consider each phase of the restoration, based on monitoring of wildlife and how changes of the previous actions impact the number and diversity of species in the region. Phase Two is balanced in favor of tidal marsh because the ponds that are included are shallow and have the best likelihood of becoming tidal marsh before rising seas create greater challenges for this habitat type. Many of the species that will benefit most from marsh restoration are threatened and endangered. In addition, Pond R3 is being maintained as a seasonally dry pond specifically to promote snowy plover habitat.

The balance of public access and wildlife needs continues to be a challenge. The EIS/EIR identified additional public access features that will not be implemented in Phase Two due to cost and the needs of wildlife. The Commission's public access policies take into consideration compatibility with wildlife, particularly in wildlife refuges when determining whether a project is proposing the maximum feasible public access consistent with the proposed project.

Entrainment of listed salmonids and estuarine fish in managed ponds continues to be an issue that is yet to be resolved. Some entrainment could be addressed through screening water intake structures, but this is an expensive requirement that requires significant maintenance due to fouling organisms and would add a significant burden to the project. Monitoring the managed ponds for entrained fish can inform this issue and determine whether screening would be a necessary protection for listed fish.

The USFWS Protected Species Unit completed a programmatic Biological Opinion for the entire SBSPR Project, including Phase One actions in August of 2008. The USFWS programmatic opinion considered the potential effects of the SBSPR project on the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) (harvest mouse), endangered Ridgeway's rail (*Rallus obsoletus obsoletus*), threatened western snowy plover (*Charadrius alexandrinus nivosus*) (plover), the endangered California least tern (*Sternula antillarum browni*) (tern), and the threatened California brown pelican (*Pelecanus occidentalis californicus*) and determined that the proposed project is not

likely to adversely affect any of these species. Furthermore, the Biological Opinion found that the creation of tidal wetlands and managed ponds would greatly increase the amount of habitat that supports these species.

In November 2017, the USFWS completed its Biological Opinion for Phase Two actions, and included conservation measures from the initial programmatic biological opinion and added measures more specific to Phase Two. Two measures address the potential for public access to affect wildlife, one requires signage to inform the public that they are not allowed in areas of sensitive habitat, and the other provides for seasonal closures of trails adjacent to sensitive species during the nesting season. Others require implementation of minimization measures, such as timing of certain activities with the tides, seasonal work windows, vegetation removal and fencing during construction activities that are protective of species. The conclusion of this biological opinion was that Phase Two, if implemented as proposed with the listed conservation measures, would not likely jeopardize the continued existence of the species listed and an incidental take statement include the expected level of harm and harassment, and provided the required exception.

On May 24, 2018, NOAA's National Marine Fisheries Service (NMFS) completed its assessment of the Phase Two actions and issued its Biological Opinion, Incidental Take Statement and Essential Fish Habitat Consultation. This analysis of potential effects on the federally threatened Central California Coast steelhead (*Oncorhynchus mykiss)* and the threatened Southern Distinct Population of green sturgeon (*Acipenser medirostris)* determined that the project would not likely jeopardize the continued existence of these species, nor is it likely to adversely modify their critical habitat. However, like the USFWS, NMFS determined that "take" of these species is likely to occur, and provided non-discretionary terms and conditions, as well as conservation measures. Conservation measures included seasonal work windows for in-water work, limits timing of breaches, closure of water intake structures during peak migration periods, other operational controls, and installation of modified trash barriers to screen water control structures to reduce potential entrainment. The biological opinion also notes the continued study of entrained fish in Pond A and sets forth requirements for their protection during monitoring activities. This study may further inform concerns over entrainment in other ponds. As part of the incidental take authorization, NMFS included permission to tag listed steelhead to assist in understanding their lifecycle and use of the SBSPR Project area.

The Commission should determine whether the project is consistent with its laws and policies regarding natural resources.

4. **Water Quality Policies.** The Bay Plan policies on water quality state that "[B]ay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality." The policies also state that "[w]ater quality in all parts of the Bay should be maintained at a level that will support and

promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board's (Water Board) Basin Plan and should be protected from all harmful or potentially harmful pollutants." The policies, recommendations, decisions, advice, and authority of the State Water Resources Control Board and the Regional Board should be the basis for carrying out the Commission's water quality responsibilities." Finally, the policies also state that "[n]ew projects should be sited, designed, constructed, and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling and pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate, accepted, and effective best management practices; especially where water dispersion is poor and near shellfish beds and other significant biotic resources."

On May 9, 2018, Water Board issued its water quality certification and waste discharge requirements to construct Phase Two of the SBSPR Project. The Board Order included a discussion of the potential impacts of the project to Bay water quality and addressed them via provisions and requirements for monitoring and site management, as well as implementation of the proposed habitat mitigation and monitoring plan, entitled, "Monitoring/Adaptive Management."

Water quality concerns associated with the actions in Phase Two of the SBSPR project include: (a) erosion of sediment into Bay or pond water during construction activities; (b) potential contaminant release from imported fill soils; (c) the increased turbidity associated with dredging and breaching the different ponds; (d) changes in water management resulting in changes in salinity, low dissolved oxygen associated with shallow ponds, and temperature increases; and (e) release of onsite contaminants that have acute or bio accumulative effects, such as mercury.

a. **Erosion Control**. Construction activities within and adjacent to the ponds have the potential to discharge soils, debris, and hazardous materials into the Bay and sensitive habitat. To prevent this from occurring, the USFWS will prepare a storm water pollution prevention plan (SWPPP) and provide it to the Water Board and Commission for approval. Once approved the USFWS would require all construction contractors to implement all its best management practices (BMPs) for controlling soil erosion and discharges of other construction-related contaminants and all activities that have the potential to impact water quality.

   Best management techniques to be used include floating sediment curtains; the construction of temporary containment berms, baffles, and hay bales; and hydroseeding disturbed slopes with native vegetation. All of these actions are designed to limit erosion and sediment release and keep effects localized. It should also be noted that the consistency determination states that most of the construction will occur inside the ponds prior to being breached and away from the breach locations to prevent releases to adjacent sloughs or creeks.

b. **Imported Fill and Contaminant Control**. As part of Phase Two approximately 800,000 cy of offsite soils would be imported to the project to improve flood protection levees, construct transitional habitat and habitat islands. Because offsite soils may be imported from various locations and excavation projects, it is necessary to ensure that the material being imported does not contain unacceptable level of contaminants that would impact water quality, habitat quality or the species that live there. To address this potential concern, the USFWS and project partners prepared a quality assurance project plan developed specifically for the Phase Two actions that was approved by the Water Board, entitled "South Bay Salt Pond Restoration Project Quality Assurance Project Plan for Fill Import to Operate and Maintain Levees at Ravenswood and Alviso Salt Pond Complexes (January 12, 2017)" (Fill QAPP). In order to accept imported soils, the USFWS would ensure that the upland soil is tested and meets acceptance criteria in the Fill QAPP. Fill material not meeting those criteria would not be accepted for use on site. The data for upland fill material proposed for use in the project area would be provided to the agencies for review and approval according to the terms of the fill QAPP.

c. **Turbidity Increases**. Dredging, particularly in shallow muddy tidal waters, can locally increase suspended sediment and turbidity temporarily. In areas of sensitive species, operational controls can minimize the effects of increased suspended sediment or limit the impacted area. Minimization measures can include dredging during periods of the year when fewer sensitive species are present or less sensitive periods in their life cycle, use of silt curtains, testing sediment to understand contaminant issues, using appropriate dredge equipment, and potentially dredging during low tide, though this can complicate the dredging activity.

   In addition, breaching the ponds would increase tidal prisms and potentially cause erosion of the adjacent sloughs, also potentially increasing turbidity. Regarding this potential issue the Consistency Determination states "Short-term channel incision would likely result in increased sediment suspension and water turbidity downstream of areas where erosion is taking place. However, appropriate site-specific design should ensure that this effect would be comparatively minor and that it would decrease and disappear as the system equilibrates as part of habitat restoration."

d. **Water Management**. During Phase One, several ponds were converted from salt ponds to managed ponds and required sophisticated water management. During Phase One, the USFWS and its partners learned how water management could affect water temperature, dissolved oxygen levels, contaminant discharge, and nutrients. Lessons learned in Phase One will be applied to operations of proposed managed ponds in Phase Two. Phase Two includes converting managed pond A1 and A2W to tidal marsh by breaching, connecting Ravenswood managed pond R5 and S5, and improving the Ravenswood seasonal pond R3, R5 and S5 through installation of additional water control structures and levee removal. These actions should improve water quality at these ponds, and the water control structures will allow the USFWS to continue to manage the ponds for wildlife habitat in addition to improved water quality.

For example, the Consistency Determination states “Within the Ravenswood Ponds at four locations, water control structures would be installed. Water control structures are proposed to allow management of water levels and quality in managed ponds. They would give Refuge staff more ability to avoid water quality problems, algal blooms, or other adverse impacts. The water control structures would be pipe culverts with gates at each end to provide directional control.” Further, by providing the means for year-round control of water levels and some control of the salinities and other aspects of water quality in the ponds, these structures would allow for separate control of different types of managed pond habitat for various guilds of birds by allowing different bottom depths and elevations. This is particularly significant at Ravenswood Pond R3, which is specifically managed for nesting western snowy plovers, and R5 and S5 where the habitat island would be submerged in water levels were not managed.

(1) **Salinity.** High levels of salinity can impact wildlife, making habitat in inhospitable to some species, but can also potentially increase uptake of metals into the water and biota. The USFWS and its partners will continue to monitor the managed ponds and for acceptable levels of salinity. According to the Water Board, 44 ppt or less will not cause any significant or potentially significant impacts to any receiving waters. However, as a requirement of the self-monitoring plan, the USFWS is required to monitor water quality weekly June through November at discharge points and take appropriate action to avoid water quality impacts to receiving waters from high levels of salinity for Ponds R5 and S5. Such measures could include increasing water volume to dilute high levels of salinity that may occur due to evaporation during warm weather prior to releasing water to the Bay.

(2) **Dissolved Oxygen**. The USFWS has experienced difficulty in the past in maintaining adequate dissolved oxygen levels at pond discharge points, particularly in the Alviso complex. Risk factors for both algae and Dissolved Oxygen in any particular pond complex are waters that are deep, slow (long residence times), rich in nutrients, rich in organic matter, subject to calm wind exposure, and highly transparent. Conversely, the lowest risk water bodies would likely be quickly turned over (short residence times), poor in nutrients, poor in organic carbon, windy and opaque. The Phase Two actions restore 6 of the ponds to tidal action, increasing tidal exchange and reducing the potential for low dissolved oxygen associated with managed ponds.

Alviso Pond 88 and 8AS has been activity monitored and managed for dissolved oxygen and mercury. Water flow into and out of this pond has increased through opening of additional gates in the water control structure. This has reduced dissolved oxygen problems, and with additional monitoring results, the USFWS and its partners hope to fully breach the pond complex in the near future to further increase tidal flow.

Proposed management of these ponds have been designed to minimize high risk factors for low dissolved oxygen. Design elements, including hydraulic residence time, water depth, and mixing would be optimized to maintain dissolved oxygen levels that meet the RWQCB's Basin Plan Water Quality Objectives. Dissolved oxygen levels would be monitored in Ponds Alviso A8 and A8S and Ravenswood Ponds R5 and S5 and, if triggers are exceeded in the Adaptive Management Plan, then actions would be implemented to avoid significant impacts.

Pond R3, which is currently and will continue to be managed as a seasonal pond, will be managed for western snowy plover nesting habitat by actively draining it prior to nesting season and periodically refreshing the water in the borrow ditches and slough channels to enhance forage quality.

e. **Mercury**. Sediments in some of the ponds throughout the SBSPR Project area contain high levels of mercury contamination from the historic New Almaden mercury mine in the South Bay hills that has contributed large amounts of mercury to the watersheds downstream and the Bay. The Alviso complex ponds are an area of special concern because of their connection to Guadalupe Slough, and the associated accumulation of high levels of mercury. The remobilization of mercury-contaminated sediments into the water column, either directly (e.g., during excavation of pilot channels) or indirectly (through increased sediment scour after a pond is opened to tidal action).

Although mercury exists in forms that are not hazardous, it can be transformed through natural processes into toxic methylmercury. Natural accretion processes in salt marshes continually supply fresh layers of mercury-contaminated sediments that release mercury in a form that can become biologically available to mercury-methylating bacteria and subsequently bioaccumulate in the food chain. The resulting concentration of methylmercury is dependent on numerous variables, including: redox potential, salinity, pH, vegetation, sulfur (including sulfate derived from gypsum layers in pond bottoms), dissolved organic carbon, nitrogen, and seasonal variations in each of the identified variables.

The presence of high levels of mercury increase its availability for methylation. In 2006, the Water Board approved a total maximum daily load (TMDL) plan for mercury in San Francisco Bay which specifies that mercury levels cannot exceed 0.2 part per million (ppm) in large fish and 0.03 ppm in small fish. The Bay mercury TMDL also requires that activities avoid release of sediments into the Bay that have a median mercury concentration greater than 0.2 ppm, and that existing water quality objectives (0.025 – 0.050 µg/L) for mercury be attained.

As a result of the TMDL and the known high concentrations of mercury in the ponds and South Bay in general, the South Baylands Mercury Project was initiated and has been underway to improve understanding of mercury levels in the ponds, the impact of breaching ponds to the adjacent sloughs, and the associated mercury methylation. The study focuses on the Alviso area where mercury levels are known to be high, but also includes sampling sites elsewhere in the South Bay. The study measures mercury levels

in the sediment, water column, and various sentinel species; measuring the bioavailability of inorganic mercury in sediments; measuring mercury methylation across salinity gradients in managed ponds, marshes, and other habitat types.

Pond A8 has been of special concern because it contains a significant amount of mercury-laden sediment, about 2 to 10 times that seen elsewhere in the Bay. Because of this, Pond A8 was designed for restoration to muted tidal pond habitat as part of Phase One. This action was implemented with the ability to reverse the breach in the event that unacceptable ecological impacts begin to occur from muted tidal exchange with surrounding sloughs. This pond has been the focus of intense scrutiny to ensure that significant impacts from the contamination do not occur. The Monitoring and Adaptive Management Plan contain details of proposed action to remedy potential impacts should they occur. The studies to date have provided favorable results, where initial spikes in methyl mercury occurred, but since the initial spike, the levels of mercury have decreased, both pond sediment and water samples and body burden of fish and birds in the study. The project is in the process of preparing an integrated cross-discipline report that will summarize all of the mercury-related studies to date and present them to the regulatory agencies by the end of 2018.

The Phase Two action for Pond A8 and A8S includes fill and construction of transitional habitat in a fairly small portion of the ponds. While construction may have a temporary impact through sediment disturbance, the placement of fill would likely sequester some of the mercury-laden sediments beneath it. The breaching of Alviso-Mountain View Ponds and Ravenswood Pond R4 to tidal action may temporarily increase mercury methylation and exposure, however, over time because these ponds have significantly less mercury than the Alviso A8 complex, are also subsided, sediment is expected accrete in these ponds further reduce mercury levels through burial, providing a net benefit to water and sediment quality.

As part of the Monitoring and Adaptive Management Plan, analysis of mercury data collected from the South Baylands Mercury Project and other South Bay projects will be used to determine appropriate triggers to implement further management actions within prevent increases in methylmercury production and bioaccumulation. The USFWS and its SBSPR project partners are committed to continuing this work and managing these ponds to minimize impacts from mercury.

The Commission should determine whether the proposed project is consistent with its policies on water quality.

5. **Dredging.** As part of Phase Two, sediment (and other material) would be dredged both from the Commission's Bay and Salt Pond jurisdictions to: (1) breach levees; (2) create pilot channels through existing marsh; (3) create an internal channel; and (4) lower or remove portions of external or internal levees. The project description describes placement of the dredged sediment from project actions in the following areas: (1) in the proposed restored tidal areas to create ditch blocks and fill historic borrow ditches; (2) build transitional habitat; (3) create nesting islands. The Phase Two project does not include importing dredged sediment from other projects.

Bay Plan policies on dredging state in part, that "[d]redging and dredged material disposal should be conducted in an environmentally and economically sound manner. Dredgers should reduce disposal in the Bay and certain waterways over time…" According to Dredging Policy Two, the Commission should authorize dredging when it can find that (a) it serves a water-oriented use or other important public purpose; (b) the materials to be dredged meet the water quality requirements of the San Francisco Bay Regional Water Quality Control Board; (c) important fisheries and Bay natural resources would be protected through seasonal restrictions; (d) the project will result in the minimum dredging volume necessary; and (e) the materials would be disposed of in accordance with Policy 3." Dredging Policy Three states in part, that dredged materials should, if feasible, be reused or disposed outside the Bay and certain waterways. Except when reused in an approved fill project, dredged material should not be disposed in the Bay…." Further, Dredging Policy Eleven discusses the US Army Corps of Engineers and Port of Oakland's Middle Harbor Enhancement Project – a large fill project using dredged sediment to create shallow water habitat. This policy requires that until Middle Harbor Enhancement Project is shown to be a success, only a "minor amount of dredged sediment" can be used in Bay habitat projects.

The Bay Plan Salt Pond policies state, in part, that any restoration, enhancement or conversion of salt ponds to subtidal or wetland habitat should include an analysis of "[p]otential fill activities, including the use of fill material such as sediments dredged from the Bay and rock, to assist restoration objectives…."

The dredged sediment during Phase Two is proposed for use onsite to assist in meeting restoration objectives and enhancement and restoration habitat features. No dredged sediment is proposed for disposal within the Commission's Bay jurisdiction but is being beneficially used. Phase Two as described is a water-oriented use as it would restore tidal action to the project site and would increase tidal habitats of the Bay increasing resident, migrant and endangered species habitat, an important public purpose. To protect listed species, dredging activities would comply with the work windows provided in the resources agencies biological opinions for the project, as described in the natural resources section.

As discussed above, the Water Board issued its Waste Discharge Requirement for the project and required that the project sponsor utilize the Dredged Material Management Office process, off which the Water Board is a participating agency, to make suitability determinations for the sediment use prior to dredging activities. This project proposes to dredge sediment only to provide access to the tidal water of the Bay, manage water quality, and improve habitat function for wildlife, and is not navigation dredging and therefore the Long Term Management Strategy for the Placement of Dredged Sediment in the Bay Region (LTMS) Program is not applicable.

Regarding Dredging Policy Eleven, the volume of sediment proposed for habitat construction approximately 10,000 cy, is minor, given both the volume and the scope of the project. The acreage of dredged sediment placement is small, and primarily confined to ditch blocks and historic borrow ditch fill, bringing the ditch to existing grade throughout the respective ponds.

The Commission should determine whether the proposed project is consistent with its dredging policies and use of dredged sediment in habitat restoration projects.

6. **Climate Change, Shoreline Protection and Safety of Fills.** The Bay Plan policies on Climate Change state, "within areas that a risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects… should be designed to be resilient to mid-century sea level rise projection" and "[i]f it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise…." The Climate Change policies go on to state that, "[u]ntil a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts." The policies also state that natural resource restoration projects, "should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding." The Bay Plan policies on Safety of Fills state that, "[a]dequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project…."

   The Bay Plan Safety of Fills Policy Four states ,"[a]dequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The Commission may approve fill that is needed to provide flood protection for existing projects and uses…."

   The Bay Plan Shoreline Protection Policies One and Four state "New shoreline protection projects and the maintenance or reconstruction of existing projects...should be authorized if: (a) the project is necessary to provide flood or erosion protection for (i) existing development, use or infrastructure, … (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the erosion and flooding conditions at the site; [and] (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account.…" The policies also state, "[w]henever feasible and appropriate, shoreline protection projects should include provisions for nonstructural methods such as marsh vegetation and integrate shoreline protection and Bay ecosystem enhancement, using adaptive management. Along shorelines that support marsh vegetation, or where marsh establishment has a reasonable chance of success, the Commission should require that the design of authorized protection projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever feasible."

Finally, the Bay Plan Salt Pond Policy 3.c. states in part that any project for the restoration, enhancement or conversion of salt ponds to subtidal or wetland habitat should be designed and evaluated based partly on an analysis of flood management measures."

In conducting its sea level rise analysis for Phase Two, the USFWS and its partners used the upper limits of the June 2012 National Research Council (NRC) report on Sea-Level Rise for the Coasts of California, Oregon, and Washington projections, which estimated for the South Bay, are a range of 12 to 61 cm (0.39 to 2.0 feet) through 2050 and 42 to 167 cm (1.38 to 5.48 feet) through 2100, which were the appropriate and available projections to use at the time of preparation.

The USFWS noted as part of its analysis that during both the 50-year and 100-year projected periods the restored habitats, flood risk management components, and public access features all have different vulnerability to rising seas. The lifespan of each also varies as does necessary maintenance. Tidal marsh restoration projects are intended to be self-sustaining in the face of SLR as permanent features of the landscape. The inclusion of habitat transition zones to allow vegetated tidal marsh areas to migrate upward along with tidal elevations facilitates this migration, and many of the former salt pond levees around breached ponds are intended to degrade over time and will be allowed to do so.

That said, there are specific potential resilience and adaptation actions that could be implemented such as adjusting the restoration phasing to better match the sediment supply; maintaining levees along the bayfront to shelter restored tidal areas from wave energy and encourage marsh formation; removing levees along the bayfront edge to restore sustainable mudflats within the ponds; restoring natural shorelines such as shell breaches and wrack lines; using imported fill to raise pond beds to elevations conducive to vegetation establishment; and prioritizing restoration of less subsided ponds and/or ponds close to sediment supplies within the project area. In addition, modeling that incorporates rising seas, sediment availability and transport, and hydrology that can inform decisions regarding which ponds to restore based on expect resiliency and better plans for restoration actions. All of these actions are tools that would be considered in the adaptive management process that guides the SBSPR project.

Unlike restored tidal marshes, managed ponds require ongoing maintenance and repair of levees and water control structures throughout their live span which varies by pond. If monitoring indicates that pond-dependent wildlife are adjusting to the gradual loss of former salt pond habitats, additional managed ponds may be breached and restored to tidal marsh, making them more sustainable over time. Others may remain by continual maintenance and raising of external levees.

In considering the likely accelerated pace of sea level rise, the project partners selected ponds for Phase 2 that were not so deeply subsided that sediment accretion would occur at a sufficiently rapid rate to allow marsh formation ahead of, and then in pace with rising seas. The project has also been tracking and monitoring sediment accretion rates at other

locations around the South Bay and used those rates to model this potential. This strategy is based on the understanding that restoration projects that are creating or supporting natural systems are less vulnerable to storm surge and wave activity. By using naturalistic designs, creating habitat transition zones, and planning for erosion, settlement, and other changes over time, the SBSPR Project explicitly plans for storms and other extreme events.

Even with these considerations and planning, Phase Two actions at each pond cluster have areas that will remain vulnerable to rising seas. At the Alviso-Mountain View Ponds, the improved flood protection levees would be sustainable at 2050 and 2100; however, the Pond A1 western levee and Pond A2W eastern levee would only be effective through 2050, in which case the Pond A2W levee trail would also be impacted by rising seas. At Ravenswood, the habitat transition zones would be likely inundated at 2050 as would the R5/S5 east levee trail, however the higher elevation viewing platform would be available, as would the All American Canal levee and transitional habitat between the R4 tidal marsh and R3 seasonal pond. None of these features would be sustainable at 2100.

The Island Ponds would likely require little management to adapt. They are designed to become natural areas with primarily tidal marsh habitat and is expected to continue to keep pace with rising seas. Similarly, construction of habitat transition zones at Ponds A8 and A8S provide the benefits of added habitat complexity, prior to the full tidal restoration of these ponds. Because this is a deeply subsided pond, additional sediment supply would benefit and speed restoration.

The addition of habitat transition zones and establishment of tidal marshes would reduce wave run-up and storm surge and add a layer of protection greater than that based solely on levee elevation. The habitat transition zones would protect the upland areas, including the closed landfill, from erosion and reduce wave run-up and storm surge, while also providing initial habitat complexity. If sea level rise occurs more rapidly than planned, more upland fill material could be added to the tops of the transition zones to allow them to continue to provide benefits. As at the Island Ponds and A8 Ponds, the accretion of sediment and formation of tidal marsh is expected to keep pace with the current projections of sea level rise, but if this expectation is incorrect, there are adaptive management mechanisms for delivering upland fill material or dredge material to the ponds to raise their bottoms and “catch up”. Those actions would need environmental review and permitting, and are not proposed in Phase 2 actions, but such future augmentations are included as part of the project’s Adaptive Management Plan.

Regarding the flood protection features of Phase Two, the project seeks to maintain, and in some cases improve flood protection for surrounding communities and infrastructure. The Alviso-Mountain View Ponds includes raising the west levee of Pond A1 to isolate its waters from the adjacent Charleston Slough and raising the Coast Casey Forebay levee to 14.7 feet NAVD88 to provide flood protection landward of the restoration.

The trail on top of the improved levees would be sufficient elevated to be protected from rising Bay water beyond mid-century. However, depending on the adaptive management strategies developed as the restoration of the salt ponds proceeds, some of the spur trails

that run on top of pond levees may be regularly inundated or lost as sea level rises. In the future these trails may need to be improved, moved, or abandoned if space is not available at elevations sufficient to accommodate expected sea level rise. The USFWS notes that should public access areas be lost to natural processes, including SLR, they might not be replaced where they were originally built, or at all, if replacement is inappropriate.

The SBSPR Project is closely coordinated with the South Bay Shoreline Project (USACE and Santa Clara Valley Water District and improvements to San Francisquito Creek restoration (San Francisquito Creek Joint Powers Authority) and SAFER Bay, which is in the planning process. The projects are in close collaboration to make sure the alignments of levee improvements and associated trails and habitat transition zones are leveraged to reduce adverse habitat impacts and provide greater protection at lower cost.

The Commission should determine whether the proposed project is consistent with the policies on climate change, safety of fills, and shoreline protection.

B. **Review Boards**

1. **Engineering Criteria Review Board.** The Commission's Engineering Criteria Review Board (ECRB) will not review the proposed project.
2. **Design Review Board.** The Design Review Board (DRB) reviewed this project at its April 17, 2017 meeting. The DRB focused on three aspects of the public access: (1) interpretation and educational aspects of the project; (2) wildlife compatibility; and (3) adequate seating and the potential to provide more natural seating consistent with the setting. The Board suggested different interpretative methods including mapping, highlighting the salt ponds history and the modes of public access available, including: bicycle lanes, pedestrian trails, parking areas, and how the area fits into surrounding trails and parks. The Board also discussed information regarding the ecological benefits of the project and suggested a video feature and that providing views at higher elevations would improve appreciation of the site. The applicant representative discussed the planned audio interpretative that could be accessed along the trail via smart phones. The Board agreed that the Wildlife Refuge's restriction on dogs was appropriate and expressed an interest in educating the general public on protecting wildlife in these sensitive areas. The applicant's representative provided information regarding the existing and planned education programs for the public that may interface with wildlife.

   The Board turned its attention to the viewing platforms and seating proposed for the site. The Board appreciated proposed siting of the viewing platforms and agreed that each provided a unique view of the different aspects of the project. The Board suggested rotating the focus of seating area to provide additional viewing opportunities and that the applicants consider more natural seating opportunities in some areas, such as large timber or logs, stack and secured so that people could sit in a less formal way while viewing the restoration site.

The applicant's representative responded positively to the Board's suggestions regarding improvements to the seating areas and stated that as the public access amenities are further developed the project team will incorporate the Board's comments into the final design. The Design Review Board's suggestions have been incorporated in the seating elements at the suggested location.

C. **Environmental Review.** In March 2008, the USFWS, the CDFW and Conservancy finalized and certified the jointly-prepared SBSP Project Programmatic Environmental Impact Statement and Environmental Impact Report (EIS/EIR) for restoration of the entire 15,100 acres of salt pond. This Programmatic EIS/EIR was developed such that as additional phases of the SBSP Project is designed, it can be tiered under the original document.

In April 2016, the project partners finalized and certified the Final EIS/EIR for Phase Two of the SBSP Project. During this review, an environmentally superior and environmentally preferred alternative for each pond cluster was identified and are the subject of this consistency determination request. As part of this review, no significant environmental impacts were identified. However, in 2008 Programmatic EIS/EIR, areas of controversy and issues to be resolved were acknowledged. The areas of controversy include: the potential effects on mercury bioaccumulation in the South Bay; trade-offs between habitat restoration and public access/recreation; trade-offs between acreage of tidal marsh and managed ponds; the priority of flood protection in areas of tidal restoration; availability of funding for adaptive management and monitoring; and potential entrainment of salmonids and other native fish in managed ponds. During Phase One, many of these areas were addressed through monitoring and research leading to changes in Phase Two actions, however, during the comment period, the same areas of controversy were identified, and two additional areas were added, including whether to include Charleston Slough in the restoration of the Alviso-Mountain View pond cluster, and the inclusion of the Bayfront Canal and Atherton Channel in the Ravenswood pond cluster. In both cases, the inclusion was examined and determined that additional work was necessary on the part of local governments to address additional impacts by the inclusion of either of these areas. In particular, inclusion of Charleston Slough increased the potential for listed salmonids to be entrained in an unscreened water intake structure for a local recreation area. Further, the restoration as proposed would not preclude the inclusion of these areas in the future, and therefore were not identified as an impact, but rather an area for potential coordination with the local agencies as additional plans are developed.

The issues to be resolved are part of the proposed Adaptive Management and Monitoring Plan and targeted studies as well as monitoring restoration techniques and progress will inform decisions for future phases of the SBSP Project. These issues were identified in the Tidal Marsh and Tidal Flats policy discussions in Section 3a. A summary of the Final EIS/R is attached as Exhibit K.

D. **Relevant Portions of the McAteer-Petris Act**

1. Section 66602 and 66602.1
2. Section 66605
3. Section 66610
4. Section 66632

E. **Relevant Portions of the San Francisco Bay Plan**

3. *San Francisco Bay Plan* Policies on Fish, Other Aquatic Organisms, and Wildlife (page 15)
4. *San Francisco Bay Plan* Policies on Water Quality (page 17)
5. *San Francisco Bay Plan* Policies on Water Surface Area and Volume (page 20)
6. *San Francisco Bay Plan* Policies on Tidal Marshes and Tidal Flats (page 21)
7. *San Francisco Bay Plan* Policies on Climate Change (page 31)
8. *San Francisco Bay Plan Policies* on Safety of Fills (page 39)
9. *San Francisco Bay Plan Policies* on Protection of the Shoreline (page 42)
10. *San Francisco Bay Plan Policies* on Dredging (page 44)
11. *San Francisco Bay Plan Policies* on Public Access (page 66)
12. *San Francisco Bay Plan Policies* on Salt Ponds (page 72)

Exhibits

A. **Vicinity Map**

B. **South Bay Salt Ponds Restoration Project Phase Two Pond Locations**

C. **Island Ponds A19, A20 Enhancement Plan**

D. **Ponds A8 and A8S Enhancement Plan**

E. **Alviso-Mountain View Ponds A1 and A2W Restoration Plan**

F. **Ravenswood Ponds R3, R4, R5, and S5 Restoration Plan**

G. **Public Access Plan**

H. **Pond 8A and 8AS Existing Public Access**

I. **Alviso Mountain View Ponds Public Access Plan**

J. **Ravenswood Ponds Public Access Plan**

K. **Site Photos**

L. **Environmental Document Summary**